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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,024	03/27/2000	Mitsunobu Yoshida	0039-7661-2SRD	4024

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/536,024

Applicant(s)

YOSHIDA, MITSUNOBU

Examiner

Prasad R Akkapeddi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 17-22, 24-28, 49, 50 and 53-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-22, 24-28, 49, 50 and 53-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Claim Objections***

2. Claims 15, 22 and 50 are objected to because of the following informalities: The claims recite 'the control mechanism is capable of changing a value of a contact area among at least three values'. The term 'at least three values' is a new term not described in the specification. If the applicant refers to 'grayscale image' (as described in the specification), as the meaning of 'at least three values', then the claims are interpreted to have the same meaning. Hence, the prosecution of the application has proceeded with the above interpretation. Appropriate correction is required.

3. Claims 59 and 63 are objected to because of the following informalities: The claims recite 'further comprising beams disposed on the light transmitting member and each supporting a periphery of the elastic member' is not clear. It is not clear how beams can be disposed on the light transmitting member that support a periphery of the elastic member. Appropriate correction is required.

4. Claims 58 and 62 are objected to because of the following informalities: The recitation 'a light transmitting material having a third surface' is not clear because as shown the light transmitting material (2) has only two surface and a third surface having projections is not clearly shown or identified. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-15, 17-22, 24-28, 49-50, 53-56, 59-60 and 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonekubo (U.S.Patent No. 6,470,115) in view of Cromack (U.S.Patent No. 4,726,662).

As to claim 1: Yonekubo discloses a display device (2) comprising a light transmitting member (21), a light source (5) that irradiates the light transmitting member with light and a control mechanism (31) (col. 6, lines 1-10),

configured to switch between total reflection and transmission a behavior of the light, incident into the light transmitting member from the light source, at an interface between the light transmitting member and an external region (col. 6, line 61) adjacent to the light transmitting member, wherein the display device is configured to cause at least a portion of the light (col. 12, line 36), emitted by the light source and irradiating the light transmitting member (21) to be output as a light component having directivity from the light transmitting member onto a scattering surface (7) without being scattered, the scattering surface (7) is spaced apart from the light transmitting member and the control mechanism (Fig. 10), and the light component is used to display images (col. 12, lines 28-39).

Yanekubo discloses a light transmitting member (31) having a first surface and a second surface (32) (as can be seen in Fig. 1) and light beam from a source irradiating the first surface. However, Yanekubo does not teach or disclose the first surface provided with depressions as recited in the newly recited limitation.

Cromack in disclosing a display discloses a light transmitting member (50) with a first and second surface and the first surface (54) having depressions (52, 54) and the light source (56) irradiating the first surface. Though Cromack's device consists of a liquid crystal, the teachings of the light transmitting member as it applies to a display are equally applicable to any type of device for enhancing the contrast of the display (col. 2, lines 46-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the depressions as disclosed by Cromack to the display of Yanekubo for enhancing the contrast of the display (col. 2, lines 46-51).

As to claims 2-7: Yonekubo discloses that the control mechanism is configured to change a refractive index of the external region (col.6, lines 64-67), the control mechanism comprises a transparent member (36) opposing the light transmitting member (Fig. 1) and a moving mechanism configured to change the state of the transparent member (36) with respect to light transmitting member between a contact state and a separated state (on-off control, col. 7, lines 35-38). Yonekubo discloses the light transmission and reflection, thus displaying of images on a scattering surface (7).

Yonekubo discloses that the light transmitting material is either glass or transparent plastic, thus a solid and being plastic, is an elastic material.

As to claim 8: Yonekubo discloses plurality of control mechanisms arrayed on the light transmitting member (Fig. 11 and col. 12, lines 43-46). Yonekubo also discloses a light transmitting material, either glass or transparent plastic (col. 5, line 42), and the control mechanism configured to change a contact state of the light transmitting material is disclosed as an on-off control (col. 7, line 35-38).

Yanekubo discloses a light-transmitting member (31) having a first surface and a second surface (as can be seen in Fig. 1) and light beam from a source irradiating the first surface. However, Yanekubo does not teach or

disclose the first surface provided with depressions as recited in the newly recited limitation.

Cromack in disclosing a display discloses a light transmitting member (50) with a first and second surface and the first surface (54) having depressions (52, 54) and the light source (56) irradiating the first surface. Though Cromack's device consists of a liquid crystal, the teachings of the light transmitting member as it applies to a display are equally applicable to any type of device for enhancing the contrast of the display (col. 2, lines 46-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the depressions as disclosed by Cromack to the display of Yanekubo for enhancing the contrast of the display (col. 2, lines 46-51).

As to claims 9-14: Yonekubo discloses that the control mechanism is configured to change a refractive index of the external region (col.6, lines 64-67), the control mechanism comprises a transparent member (36) opposing the light transmitting member (Fig. 1) and a moving mechanism configured to change the state of the transparent member (36) with respect to light transmitting member between a contact state and a separated state (on-off control, col. 7, lines 35-38). Yonekubo discloses the light transmission and reflection, thus displaying of images on a scattering surface (7).

Yonekubo discloses that the light transmitting material is either glass or transparent plastic, thus a solid and being plastic, is an elastic material.

As to claims 15 and 22: Yonekubo discloses a display device (2) comprising a light transmitting member (21), a light source (5) that irradiates the light transmitting member with light and a control mechanism (31) (col. 6, lines 1-10), and a plurality of control mechanisms (Fig. 11 and col. 12, lines 43-46), configured to switch between total reflection and transmission a behavior of the light, incident into the light transmitting member from the light source, at an interface between the light transmitting member and an external region (col. 6, line 61) adjacent to the light transmitting member, wherein the display device is configured to cause at least a portion of the light (col. 12, line 36), emitted by the light source and irradiating the light transmitting member (21) to be output as a light component having directivity from the light transmitting member onto a scattering surface (7) without being scattered, the scattering surface (7) is spaced apart from the light transmitting member and the control mechanism (Fig. 10), and the light component is used to display images (col. 12, lines 28-39). (Note: In contact state, the first surface of the control mechanism, 31 and the second surface (32) will change a contact state.

Yanekubo also discloses that the display is capable of displaying grayscale images (col. 1, lines 51-55), thus having three values that can produce grayscale images according to the interpretation given in paragraph 2 above.

As to 17-22 and 24-28: Yonekubo discloses that the light transmitting material is either glass or transparent plastic, thus a solid and being plastic, is an elastic material, a scattering surface (7) and the image display with intensity



changes of light that has to pass through the second surface (32) in the transmission mode and reflected by the second surface in reflection mode.

As to claims 49-50: Yonekubo discloses a manufacturing method of the control mechanism (optical switch), capable of switching between total reflection and transmission a behavior of light, incident into a light transmitting member from a light source, at an interface between the light transmitting member and an external region adjacent to the light transmitting member and arranging these control mechanisms in a two-dimensional form, it is possible to provide an image display device capable of color display with high resolution (col. 12, lines 6-27). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the method of manufacturing the control mechanism and the resulting display device as disclosed by Yonekubo to obtain a color display with high resolution (col. 12, line 23).

Yanekubo discloses a light transmitting member (31) having a first surface and a second surface (32) (as can be seen in Fig. 1) and light beam from a source irradiating the first surface. However, Yanekubo does not teach or disclose the first surface provided with depressions as recited in the newly recited limitation.

Cromack in disclosing a display discloses a light transmitting member (50) with a first and second surface and the first surface (54) having depressions (52, 54) and the light source (56) irradiating the first surface. Though Cromack's device consists of a liquid crystal, the teachings of the light transmitting member

as it applies to a display are equally applicable to any type of device for enhancing the contrast of the display (col. 2, lines 46-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the depressions as disclosed by Cromack to the display of Yanekubo for enhancing the contrast of the display (col. 2, lines 46-51).

Yanekubo also discloses that the display is capable of displaying grayscale images (col. 1, lines 51-55), thus having three values that can produce grayscale images according to the interpretation given in paragraph 2 above.

As to claims 53-56, 59-60 and 63-64: Cromack discloses a first surface with depressions and V-shaped section for the depressions (Fig. 3), and triangular wave-like structure on the first surface and an elastic member as disclosed by Yanekubo.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the depressions as disclosed by Cromack to the display of Yanekubo for enhancing the contrast of the display (col. 2, lines 46-51).

7. Claims 57 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanekubo and Cromack as applied to claims 15 and 22 above, and further in view of Stern (U.S. Patent No. 5,771,321).

Neither Yonekubo nor Cromack teach or disclose the use of cantilevers.

Stern in disclosing a micro-mechanical optical switch and flat panel display teaches the use of cantilever beams supported by two or more supports as alternative tap configurations.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the cantilever tap mechanism as disclosed by Stern to achieve a stable mechanical response to the actuation force (Stern, col. 15, lines 28-41).

***Allowable Subject Matter***

8. Claims 58 and 62 are objected to as being dependent upon a rejected base claim, but would be allowable (only when the objections as identified in paragraph 4 above have been overcome) if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches a light transmitting material having a third surface facing the second surface and provided with tapered projections.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1-15, 17-22, 24-28, 49, 50 and 53-64 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 571-272-2285. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

Art Unit: 2871

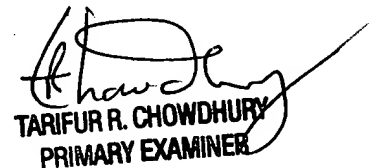
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Prasad R Akkapeddi, Ph.D  
Examiner  
Art Unit 2871



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER